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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,788	02/06/2002	Timothy Warner	02023	4514

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EXAMINER

MORILLO, JANEL COMBS

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/066,788	Applicant(s) WARNER, TIMOTHY	
	Examiner Janelle Combs-Morillo	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-12 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-12 and 25-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 22, 2004 has been entered.

Claim Objections

2. Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 9 (which is dependent on claim 1) mentions the equivalent time at 120°C is 100-250 hours, which is broader than independent claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6, 9-12, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chakrabarti et al (US 2002/0121319 A1).

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Chakrabarti et al teaches a process for manufacturing Al-Zn-Cu-Mg alloy products of high compressive strength (see Table 3) by casting an ingot, homogenizing, extruding, solution heat treating, quenching, cold stretching, and aging to obtain high compressive strength (see [0054], [0022]). Chakrabarti et al said process can be used for Al-Zn-Cu-Mg alloy products made into upper wing structures of a commercial aircraft wing, which are compressively loaded (see [0004]), thereby requiring high compressive yield strengths. Chakrabarti et al teaches an aging practice that “won’t unduly sacrifice strength properties while still improving the corrosion resistance of high performance, 7XXX aluminum alloys” (see [0022]). Chakrabarti et al teaches the use of 7XXX alloys, such as 7055 (see Table 1), to achieve compressive yield strengths about 10-15% higher than previous attempts (see [0020]). Broadly, Chakrabarti et al teaches performing said process on alloys comprising: 6-10% Zn, 1.2-1.9% Mg, 1.2-2.2% Cu, and one or more of: up to 0.4% Zr, up to 0.4% Sc, and up to 0.3% Hf (see [0023]).

In Table 3, Chakrabarti et al teaches a compressive yield strength of 73.2 ksi in the L direction. Chakrabarti does not mention that this is the maximum compression YS in the L direction. However, because Chakrabarti et al teaches that compressive yield strength is a result effective variable (dependent on alloy composition and aging treatment, see Table 3 and [0020]), and because Chakrabarti et al teaches a substantially overlapping alloy composition as well as aging cycle, it is held to be within the level of one of ordinary skill in the art to determine the optimum or workable ranges of said variable (that is, to obtain the maximum compression YS in the L direction), given the disclosure of Chakrabarti.

Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e. they produce a new and

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unexpected result. However, said parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Concerning claims 2-6, as stated above, Chakrabarti et al teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Chakrabarti because Chakrabarti finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-12, Chakrabarti et al teaches aging in 2 or 3 steps- aging at a first temperature of 230-250°F for 2-18 hrs (see [0017]), aging at a second temperature of 305-325°F for 6-18 hr (see [0018]), and optionally aging at a third temperature of 230-250°F for 2-18 hrs (see [0019]), which overlaps the presently claimed aging temperature ranges and equivalent times. The minimum equivalent time taught by Chakrabarti et al for a 3 stage aging process is approximately >154.4 hrs, while the equivalent time for a 2 stage aging process is approximately >153.7 hrs. These values were calculated by summing the individual t_{eq} (as set forth in the equation given by the specification and recited below) of the three (or two) minimum times and temperatures taught by the prior art- $t_{eq}(\text{total})=t_{eq1}+t_{eq2}+t_{eq3}$

first aging $T_1=230^\circ\text{F}$ $t_1=2\text{hr}$ $t_{eq1}=0.7\text{hrs},$

second aging $T_2=310^\circ\text{F}$ $t_2=6\text{hr}$ $t_{eq2}=153\text{ hrs},$

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third aging $T_3=230^{\circ}\text{F}$ $t_3=2\text{hr}$ $t_{eq3}=0.7$
 $t_{eq\text{ total}}=154.4\text{ hrs}$

$$t_{eq} = \frac{t(e^{-16,000/T})}{e^{-16,000/T_{ref}}}$$

Because Chakrabarti teaches substantially overlapping aging time and temperature ranges, it is held that Chakrabarti has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 26, 27, though Chakrabarti does not specify a metallurgical temper between two known temper designations, because Chakrabarti teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

5. Claims 1-7, 9-10, and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ponchel et al (US 4,954,188).

Ponchel teaches a method of producing a high strength Al-Zn-Cu-Mg alloy by casting an ingot (column 3 line 24), homogenizing, hot working, solution heat treating (column 3 lines 25-26, 31, 45), and aging in a single stage at 270-285°F for 6-30 hrs (abstract, for a $t_{eq}=20-227$ hrs), which overlaps the presently claimed method aging time and temperature equivalence. Ponchel teaches said alloy comprises (in weight%): 5.9-8.2% Zn, 1.5-4.0% Mg, 1.5-3.0% Cu, and 0.5% max. Zr, Mn, Ti, balance aluminum (abstract, column 7 lines 12-14). Ponchel teaches high compressive strengths of up to 94.1 ksi can be achieved (see Table III). Peak compressive strength is achieved by Ponchel for Ex. 6 with an aging treatment of 24hrs at 275°F, which is equivalent to $t_{eq}=107$. Ponchel teaches that the tensile properties increase but the compressive strength decreases for an aging treatment of 24 hrs at 300°F, which is equivalent to $t_{eq}=390$

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(outside the present invention). Ponchel teaches that compressive strength is dependent on aging time and temperature.

Because Ponchel et al teaches a substantially overlapping alloy composition as well as aging cycle, it is held to be within the level of one of ordinary skill in the art to determine the optimum or workable ranges of said variable (that is, to obtain the maximum compression YS in the L direction), given the disclosure of Ponchel. (Additionally, as stated above, Ponchel teaches an example maximizing the compression YS).

Because Ponchel teaches substantially overlapping aging time and temperature ranges, it is held that Ponchel has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 2-6, 25, and 28, as stated above, Ponchel teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Ponchel because Ponchel finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-10, Ponchel teaches aging, which overlaps the presently claimed aging temperature ranges and equivalent times.

Concerning claims 26, 27, 29, and 30, though Ponchel does not specify a metallurgical temper between two known temper designations, because Ponchel teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

Response to Arguments/Amendments

6. In the response filed on November 22, 2004, applicant added new claims 25-30, and submitted various arguments traversing the rejections of record. The examiner agrees that no new matter has been added.

The examiner agrees that Chakarabarti does not overlap the Mg range of claims 25 and 28.

Applicant's argument that the present invention is allowable over the prior art of record because Chakrabarti teaches at Table 3 a minimum aging time of 6 hours at 160°C, which corresponds to an equivalent aging time of 258 hours at 120°C, has not been found persuasive. The examiner agrees that 6 hrs at 160°C corresponds to 258 hrs at 120°C, however, at [0018] Chakrabarti teaches that the second ageing step can be performed between 305-325°F, wherein at an exposure temperature of 310°F would require an exposure time of 6-18 hrs (p. 3 lines 21-22). For an aging temperature of 310°F and time of 6 hrs, the $t_{eq}=153$ hrs. Therefore, it is apparent that Chakrabarti teaches an overlapping aging time and temperature schedule (see rejection above).

The examiner agrees that Chakrabarti prefers a three stage aging. The new grounds of rejection in view of Ponchel, has been applied to indep. 7 (among other claims). The examiner points out that though the examples and the preferred alloying range max. of 6.9% Zn taught by Ponchel does not overlap the presently claimed minimum of 7.0% Zn, the broad range taught by Ponchel is 5.9-8.2% Zn, which does overlap the presently claimed range of Zn. Additionally, Ponchel teaches maximizing compressive strength (see discussion above).


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Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCM 
January 31, 2005


GEORGE WYSZUMIERSKI
PRIMARY EXAMINER